

RESPONSE TO RESTRICTION REQUIREMENT
U.S. Appln. No. 10/505,153 (Q82789)

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

Claim 1. (Currently Amended) A polynucleotide ~~sequence~~
~~which is a polynucleotide sequence~~ for a target gene comprising
an isolated or purified single stranded polynucleotide ~~sequence~~
comprising continuous components (I) + (II) + (III),

-wherein

~~the polynucleotide sequence for a~~ the target gene has an
RNA ~~function~~ suppression activity in relation to RNA having a
sequence complementary to either the component (I) or (III) or a
partial sequence thereof,

wherein, the component (III) comprises a ~~continuous~~
polynucleotide sequence of 15 to 30 nucleotides in length that
has a polynucleotide sequence complementary to that of the
target gene,

wherein the component (II) is a bond or a nucleotide
sequence ~~or non-nucleotide sequence with a base length of~~ from
10 nucleotidebase to 10 kilobases in length ~~(where, 0 base means~~
~~a bond), and~~

the component (I) is a polynucleotide sequence comprising a
polynucleotide sequence complementary to the polynucleotide
sequence of component (III).

Claim 2. (Currently Amended) The polynucleotide ~~sequence~~
according to claim 1, wherein the polynucleotide sequence of the
component (III) comprises DNA or RNA.

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Claim 3. (Currently Amended) The polynucleotide ~~sequence~~ according to claim 1, wherein ~~the component (I) or (III) further~~ ~~has comprises~~ a sequence comprising from 1 to several U, T, G, C, or A bases on at least one terminal, or has such deleted, substituted or added within~~inside~~ of the complementary sequence.

Claim 4. (Currently Amended) The polynucleotide ~~sequence~~ according to claim 1, wherein the polynucleotide ~~sequence~~ is obtained by chemical synthesis or gene recombination technology.

Claim 5. (Currently Amended) A polynucleotide ~~sequence for~~ a ~~target gene~~ comprising a single stranded RNA having the sequence of SEQ ID No. 1 or 2.

Claim 6. (Cancelled).

Claim 7. (Currently Amended) The polynucleotide ~~sequence~~ according to claim 6, wherein ~~the nucleotide sequence of the~~ component (II) ~~comprises is from a nucleotide sequence of~~ 1 nucleotide base to or more and less than 10 kilobases in length.

Claim 8. (Currently Amended) The polynucleotide ~~sequence~~ according to claim 7, wherein ~~the nucleotide sequence of the~~ component (II) ~~is comprises a nucleotide sequence of a length of~~ from 1 ~~base to several hundred bases~~ nucleotides in length.

Claim 9. (Currently Amended) The polynucleotide ~~sequence~~ according to claim 8, wherein ~~the nucleotide sequence of the~~ component (II) ~~is comprises a nucleotide sequence of a length of~~ from 1 ~~base to several dozen bases~~ nucleotides in length.

Claim 10. (Currently Amended) The polynucleotide ~~sequence~~ according to claim 9, wherein ~~the nucleotide sequence of the~~ component (II) ~~is comprises a nucleotide sequence of a length of~~ from 1 ~~base to 20 bases~~ nucleotides in length.

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Claim 11. (Currently Amended) The polynucleotide ~~sequence~~ according to claim 10, wherein ~~the component (II) has the~~ sequence of is indicated by SEQ ID No. 3 or 4.

Claim 12. (Currently Amended) The polynucleotide ~~sequence~~ according to claim 1, wherein ~~the nucleotide sequence or non-nucleotide sequence of the component (II) comprises~~ PNA, a cytoplasm translocation sequence, a sequence having a decoy activity, an interferon induction suppressing sequence, a sequence having any of RNase suppression activity, antisense activity, ribozyme activity, or transfer RNA, or a combination ~~thereof of these.~~

Claim 13. (Currently Amended) A method for manufacturing the polynucleotide ~~sequence of any of claims 1 to 12, comprising~~ by chemical synthesis chemically synthesizing said polynucleotide or preparing said polynucleotide by gene recombination technology.

Claim 14. (Currently Amended) A recombinant vector ~~wherein comprising the polynucleotide sequence for a target gene of any of claims 1 to 12 is inserted in a vector.~~

Claim 15. (Currently Amended) A method of manufacturing the recombinant vector of claim 14, comprising inserting wherein the ~~polynucleotide sequence for a target gene of any of claims 1 to 12 is inserted in into~~ a vector.

Claim 16. (Withdrawn and Currently Amended) A method ~~for screening pharmaceutical product target genes using the polynucleotide sequence for a target gene of any of claims 1 to 12, which is a screening method~~ for assaying compounds to stimulate or suppress functions related to a target gene by comprising:

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(A) introducing an isolated or purified single strand stranded polynucleotide sequence comprising continuous components (I) + (II) + (III) of claim 1 into cells or tissues, and

(B) using a single strand said single-stranded polynucleotide sequence to increase or decrease the RNA ~~function~~ suppression activity of a ~~genes~~ genes having a sequence complementary to the polynucleotide sequences of either of the component (I) or (III); wherein the method ~~for screening pharmaceutical product target genes~~ employs ~~any one~~ a method selected from the following methods:

- (a) using labeling directly or indirectly bonded to a candidate compound to measure the binding of the candidate compound and a polypeptide of an amino acid sequence that is coded by the target gene, or a target gene expression product (or a cell or membrane thereof that carries the polypeptide of an amino acid sequence that is coded by the target gene, or a target gene expression product), or a fusion protein thereof;
- (b) measuring in the presence of a labeled competition substance the binding of a candidate compound and a cell into which the single strand polypeptide

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sequence has been introduced (or cells or the membrane thereof carrying the single strand polypeptide sequence), or a fusion substance thereof;

- (c) using a detection system applied to a cell or cell membrane carrying a polypeptide of an amino acid sequence that is coded by the target gene or an expression product of the target gene to determine whether or not a candidate compound has a signal produced by suppressing or activating the polypeptide or expression product of the target gene based on the single strand polynucleotide sequence;
- (d) preparing a mixture by simultaneously mixing a candidate substance and a solution containing an amino acid sequence that is coded by the target gene or an expression product of the target gene, measuring the activity of the polypeptide or the expression product of the target gene in the mixture, and comparing the activity of the mixture with that of a standard; and
- (e) detecting the effect in the cell that the candidate compound has on the mRNA that codes the polypeptide of the amino

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acid sequence that is coded by the target gene, and on the product of the polypeptide of the amino acid sequence coded by the target gene.

Claim 17. (Currently Amended) A pharmaceutical composition ~~taking~~ comprising the polynucleotide sequence for a target gene according to any of claims 1 to 12, and a pharmaceutically acceptable carrier as the active ingredient.

Claim 18. (Currently Amended) A pharmaceutical composition ~~taking~~ comprising the recombinant vector of claim 14, and a pharmaceutically acceptable carrier as the active ingredient.

Claim 19. (Withdrawn and Currently Amended) A method for suppressing the function of a target gene or method for suppressing the activity of a transcript of a target gene comprising ~~for~~ introducing an isolated or purified single ~~strand~~ stranded polynucleotide ~~sequence~~ comprising continuous components (I) + (II) + (III) into cells or tissues, and ~~to suppress~~ suppressing the function of a target gene based on an RNA ~~function~~ suppression activity of a gene having a sequence complementary to the polynucleotide sequence of either of the component (I) or (III),

wherein, ~~the~~ the component (III) comprises a ~~continuous~~ polynucleotide sequence of 15 to 30 nucleotides that has a polynucleotide sequence complementary to that of the target gene,

wherein ~~the~~ the component (II) is bond or a nucleotide sequence ~~or non-nucleotide sequence with a base length of from 0 base 1 nucleotide~~ to 10 kilobases in length ~~(where, 0 base means a bond)~~, and

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wherein the component (I) is a polynucleotide ~~sequence~~ comprising a sequence complementary to the polynucleotide sequence of component (III).

Claim 20. (Withdrawn and Currently Amended) The method according to claim 19, wherein the nucleotide sequence ~~comprising polynucleotides of the component (III)~~ comprises DNA or RNA.

Claim 21. (Withdrawn and Currently Amended) The method according to claim 19, wherein ~~the component (I) or (III) is DNA or RNA that has a sequence comprising~~ from 1 to several of U, T, G, C, or A bases on any terminal, or has such ~~deleted, substituted or added inside~~ within the sequence.

Claim 22. (Withdrawn and Currently Amended) The method according to claim 19, wherein the polynucleotide ~~sequence~~ is obtained by chemical synthesis or gene recombination technology.

Claim 23. (Withdrawn and Currently Amended) The method according to claim 19, wherein the single stranded polynucleotide ~~sequence~~ comprises a single stranded RNA having the sequence of SEQ ID No. 1 or 2.

Claim 24. (Withdrawn and Currently Amended) The method according to claim 19, wherein ~~the component (II) is a bond or nucleotide sequence or a non nucleotide sequence,~~ or a combination thereof.

Claim 25. (Withdrawn and Currently Amended) The method according to claim 24, wherein ~~the nucleotide sequence of the component (II) comprises a nucleotide sequence of from 1 nucleotide base or more and less than to 10 kilobases in~~ length.

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Claim 26. (Withdrawn and Currently Amended) The method according to claim 25, wherein ~~the nucleotide sequence of the component (II) comprises a nucleotide sequence of a length of~~ from 1 base to several hundred bases nucleotides in length.

Claim 27. (Withdrawn and Currently Amended) The method according to claim 26, wherein ~~the nucleotide sequence of the component (II) comprises a nucleotide sequence of a length of~~ from 1 base to several dozen bases nucleotides in length.

Claim 28. (Withdrawn and Currently Amended) The method according to claim 27, wherein ~~the nucleotide sequence of the component (II) comprises a nucleotide sequence of a length of~~ from 1 base to 20 bases nucleotides in length.

Claim 29. (Withdrawn and currently amended) The method according to claim 28, wherein ~~the component (II) has the sequence of~~ is indicated in SEQ ID No. 3 or 4.

Claim 30. (Withdrawn and Currently Amended) The method according to claim ~~18~~19, wherein ~~the nucleotide sequence or non-nucleotide sequence of the component (II) comprises~~ PNA, a cytoplasm translocation sequence, a sequence having a decoy activity, an interferon induction suppressing sequence, a sequence having any of RNase suppression activity, antisense activity, ribozyme activity, or transfer RNA, or a combination ~~of these~~ thereof.

Claims 31-35. (Cancelled).

Claim 36. (Withdrawn and Currently Amended) A method for testing the function of a target gene ~~by comprising~~ introducing an isolated or purified single ~~strand~~ stranded polynucleotide ~~sequence comprising~~ continuous components (I) + (II) + (III) into cells, tissues, non-human animals, or plants to have an RNA

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~~function~~—suppression activity of a gene having a sequence complementary to the polynucleotide sequence of either of the component (I) or (II),

~~wherein~~wherein, ~~the~~ component (III) comprises a ~~continuous~~ polynucleotide sequence of 15 to 30 oligonucleotide in length that has a polynucleotide sequence complementary to that of the target gene,

~~the wherein~~ component (II) is a bond or nucleotide sequence ~~or non-nucleotide sequence with a base length of from~~ 1 nucleotide from 0 base to 10 kilobases ~~(where, 0 base means a bond in length)~~, and

~~the wherein~~ component (I) is a polynucleotide sequence comprising a polynucleotide sequence complementary to the polynucleotide sequence of the component (III).

Claim 37. (Withdrawn and Currently amended) A method for detecting a candidate compound to reinforce the function of a target gene comprising the steps of:

culturing cells, tissues, non-human animals, or plants in the presence of a test compound; thereafter

introducing an isolated or purified single ~~strand~~ stranded polynucleotide ~~sequence~~ comprising continuous components (I) + (II) + (III) into said cells, tissues, non-human animals, or plants ~~after culturing the test compound together with the cells, tissues, non-human animals, or plants; and~~

~~comparing to a control~~ the RNA ~~function~~ suppression activity of the RNA of a gene having a sequence complementary to the polynucleotide sequence of either of ~~the~~ component (I) or (III), to a control,

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wherein, ~~the~~ component (III) comprises a ~~continuous~~ polynucleotide sequence of 15 to 30 nucleotides that has a sequence complementary to that of the target gene,

~~wherein~~the component (II) is a bond or nucleotide sequence ~~or non-nucleotide sequence with a base length of from 0 bases 1 nucleotide to 10 kilobases in length (where, 0 bases means a bond)~~, and

wherein ~~the~~ component (I) is a polynucleotide ~~sequence~~ comprising a polynucleotide sequence complementary to the sequence of component (III).

Claim 38. (currently amended) A polynucleotide ~~sequence for a target gene~~ according to any of claims 1 to 4, wherein the component (III) comprises ~~any type of~~ 1 to 5 ribonucleotides continuing at ~~the~~ 18 to 25 ribonucleotides complementary to the target gene, and ~~the~~ component (I) comprises 18 to 25 ribonucleotides complementary to the 18 to 25 ~~nucleotides~~ ribonucleotides of the component (III).

Claim 39. (Withdrawn and Currently Amended) A method for synthesizing nucleotides for target genes including the following steps:

(i) preparing a single ~~strand~~ stranded polynucleotide comprising component (I) and (II) such that several nucleotides ~~of~~ at the 3' terminal of component (II) are complementary to several nucleotides of component (I) or (II);

(ii) synthesizing component (III) based on nucleotide synthesis enzyme activity using ~~this~~ said single ~~strand~~ stranded polynucleotide comprising components (I) and (II), or introducing ~~this~~ said single ~~strand~~ stranded polynucleotide comprising components (I) and (II) into a cell and synthesizing

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component (III) ~~based on the~~using nucleotide synthesis enzyme activity present inside the cell.

Claim 40. (Currently Amended) A ~~nucleotide~~polynucleotide for a randomized target gene obtained by the method of claim 39, wherein ~~the~~ components (I) and (III) are random oligonucleotides.